s1061443_HW4

```
# s1061443_李杰穎
#svm
from sklearn.multiclass import OneVsRestClassifier
from sklearn.svm import SVC

#10-fold cross-validation
kfold = KFold(10, True)
predicted = []
expected = []

#訓練模型
for train, test in kfold.split(dataset):
    X_train = dataset.iloc[train]
    Y_train = label.iloc[train]
    X_test = dataset.iloc[test]
    Y_test = label.iloc[test]
    svm = OneVsRestClassifier(SVC(gamma='scale')).fit(X_train, Y_train)
    expected.extend(Y_test)
    predicted.extend(svm.predict(X_test))
```

```
print("\n")
print("Average = weighted")
print('precision:', metrics.precision_score(expected, predicted, average='weighted'))
print('recall:',metrics.recall_score(expected, predicted,average='micro'))
print('F1-score:',metrics.f1_score(expected,predicted,labels=[1,2,3,4],average='weighted'))
```

```
 [  0  11   0 227   0   0   0   0]
 [  0   0   0   0 254   0   0   2]
 [  0   0   0   0   0 264   0   0]
 [  0   1   0   1   0   0 238   0]
 [  0   1   0   0   3   0   0 268]]
Accuracy: 97.13%
Average = macro
precision: 0.9737323475467228
recall: 0.9676062110641983
F1-score: 0.9507980457976O9


Average = micro
precision: 0.9712808730614589
recall: 0.9712808730614589
F1-score: 0.9485160508782556


Average = weighted
precision: 0.9720086634961772
recall: 0.9712808730614589
F1-score: 0.9485769600874481
```